

U.S. Department of Justice
Federal Bureau of Investigation



August 2011

FBI **Law Enforcement** **Bulletin**

A close-up photograph of a blue USB drive and a white USB drive resting on a stack of CDs. The text "Digital Evidence" is overlaid in white on the blue USB drive. At the bottom of the image, a yellow banner with the text "CRIME SCENE-DO NOT ENTER" is visible.

**Digital
Evidence**



August 2011
Volume 80
Number 8

United States
Department of Justice
Federal Bureau of Investigation
Washington, DC 20535-0001

Robert S. Mueller III
Director

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The attorney general has determined that the publication of this periodical is necessary in the transaction of the public business required by law. Use of funds for printing this periodical has been approved by the director of the Office of Management and Budget.

The *FBI Law Enforcement Bulletin* (ISSN-0014-5688) is published monthly by the Federal Bureau of Investigation, 935 Pennsylvania Avenue, N.W., Washington, D.C. 20535-0001. Periodicals postage paid at Washington, D.C., and additional mailing offices. Postmaster: Send address changes to Editor, *FBI Law Enforcement Bulletin*, FBI Academy, Quantico, VA 22135.

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The Training Division's Outreach and Communications Unit produces this publication with assistance from the division's National Academy Unit. Issues are available online at <http://www.fbi.gov>.

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Cover Photo

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Send article submissions to Editor, *FBI Law Enforcement Bulletin*, FBI Academy, Quantico, VA 22135.

FBI Law Enforcement Bulletin

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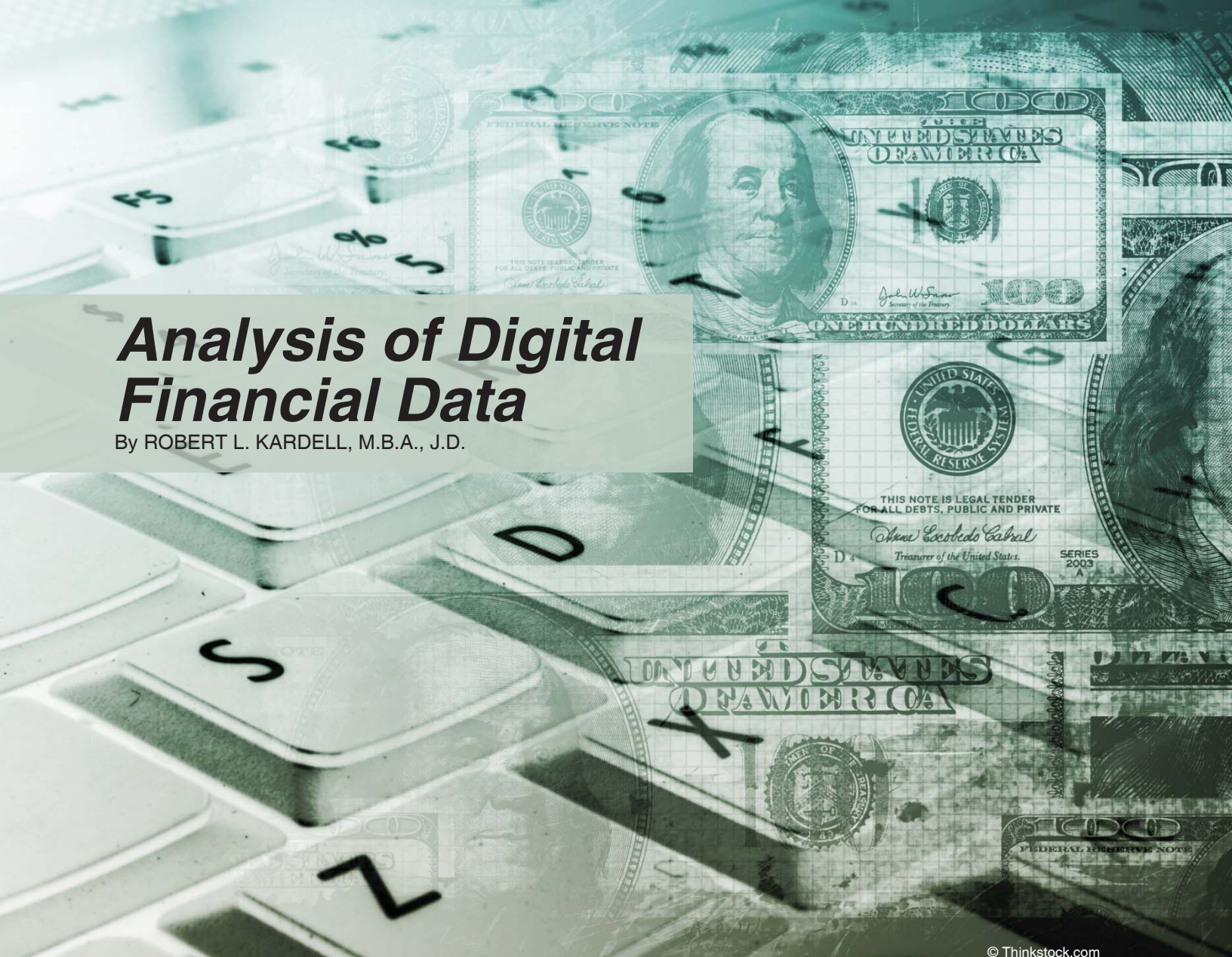
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Analysis of Digital Financial Data

By ROBERT L. KARDELL, M.B.A., J.D.

Over the past 15 to 20 years, the amount of digital financial data that investigators receive in response to subpoenas, seize during the execution of a search warrant, or collect during an arrest has risen dramatically. Financial data quickly can overwhelm investigators as the number of transactions may run into the thousands for individuals or even into the millions for

businesses. Culling through the data and identifying relevant transactions can become a daunting task, especially for law enforcement professionals investigating allegations of fraud on an unfamiliar proprietary bookkeeping system.

Fraud investigators inside and outside the government have developed methods to quickly identify suspicious financial transactions.

Determining the most useful techniques for a particular investigation depends on two factors: the amount and type of data received. Based on these two characteristics, the range of successful techniques will differ for each case. The author reviews some of the tools and methods an investigator can use to conduct investigative analysis and identify suspicious financial transactions.¹

DIGITAL ANALYSIS TOOLS

While many computers come equipped with standard office software, numerous commercial products allow investigators to analyze financial data with the techniques presented below. Each has limitations of some sort, either with price or usability, but, ultimately, the choice depends on the user's preferences and knowledge.

Spreadsheets

The most common method to cull through data and identify suspicious transactions is to load data into spreadsheet programs, for which numerous commercial products exist. Legacy versions of popular commercial software were limited to approximately 65,000 rows of data for each spreadsheet in a workbook, but

the newest versions can handle many more rows of data. In the past, for data sets with more than 65,000 rows of data, investigators had to split the information into multiple sheets or enter it into a database. Although databases certainly can conduct more complex and faster analysis than spreadsheets, the same techniques can yield equally effective results in either type of program.

Databases

Working with databases may prove much more complicated than working with spreadsheets. However, using databases also can be extremely fast, even with large data sets. Many reasonably priced or free servers exist, and these systems provide a solution for investigators who have a large data set or multiple users who need to

access it simultaneously. Each system can process several million rows of transactions and other data.

Hybrid Applications

Some applications used for accounting/forensic analysis combine aspects of database and spreadsheet programs. One such commercial hybrid application, though originally designed for financial audits, can conduct accounting/forensic or fraud analysis very efficiently. The application fuses characteristics of a spreadsheet and a database; its format resembles a spreadsheet, but it can handle an amount of data comparable to a database. It can create, import, edit, and even link multiple data tables to each other. Subsets of tables easily can be created from the results of searches and queries. The program comes with a number of built-in formulae to assist with analysis, and it can process unique scripting language to automate routine analytical tasks.

METHODS TO IDENTIFY UNUSUAL TRANSACTIONS

Data Assessment and Technique Identification

To identify unusual transactions, investigators should begin by reviewing all of the data and the transaction records that they possess because the characteristics of the data completely



“ While many computers come equipped with standard office software, numerous commercial products allow investigators to analyze financial data.... ”

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determine the analyses that investigators can perform. First, investigators should brainstorm potential clues and other insights that they might glean from each of the data fields.

In one case, for example, investigators wanted to examine a company's personnel records for fictitious employees. Fictitious employees provide a great tactic for fraudsters or companies to hide embezzlement, payments to foreign officials, or otherwise nonreimbursable expenses.

The company provided investigators a list of its employees' social security numbers (SSNs). Initially, however, the investigators did not see how they could analyze SSNs alone to expose any potentially fictitious employees. After researching the issue, discussing it with others, and reviewing possible fraud techniques, the team developed a method to determine if any of the SSNs were invalid or previously assigned. The Social Security Administration (SSA) provides guides to assess the validity of SSNs, as well as access to the Master Death Index to determine if a number belongs to a now-deceased individual. Using these tools, investigators discovered that many of the alleged employees' SSNs were fraudulent. Currently, this method is used routinely with large lists of SSNs to determine if the numbers

are legitimate. Unfortunately, when the SSA begins to issue random identification numbers in 2011 to deter fraud, this technique's effectiveness may be compromised.

Data Standardization

Some data inputs follow a tightly controlled, standardized process. But, when entries are free text, input operators can

Financial data quickly can overwhelm investigators as the number of transactions may run into the thousands for individuals or even into the millions for businesses.

enter whatever information they want in any number of formats. Standardized versus free-text inputs can affect how investigators analyze and draw conclusions from the data. Generally, standardized inputs lead to easy analysis and comparisons, whereas nonstandardized data sets can lead to incorrect or incomplete conclusions and analysis. This issue becomes more complicated when comparing multiple data sets in different formats.

Standardization refers to the process of manipulating a data set so that it conforms to a certain standard. This helps the investigator draw more accurate comparisons and more complete conclusions. A comparison of the following names provides an example:

Robert L. Kardell

Rob Kardell

Robert Kardell

Bob Kardell

If an investigator searched "Robert Kardell" across a large data set, those entries would not show as duplicates; but, after standardizing the data set (such as by separating the first and last names into different data fields), a search would identify identical last names. To standardize the data and improve the comparison even further, the investigator could highlight nicknames, such as "Bob" or "Rob," and replace them with a formal name, such as "Robert."

Investigators can standardize addresses (e.g., BLVD versus Boulevard and ST versus Street), dates (e.g., MM/DD/YYYY versus DD/MM/YYYY), quantitative amounts (e.g., \$10,000.00 versus 10000.00 USD), and phone numbers. Because most data can be presented in several alternate forms, standard formats allow for more accurate analysis. The exact standardization process depends completely on the

format of the data. Additionally, investigators should document each manipulation so that they can determine if final matches, comparisons, and conclusions are based on original or standardized data.

Unusual Amounts

To identify unusual amounts, an investigator should follow three steps: 1) sort the numbers, 2) identify the highest amounts and their payees, and 3) assess the reasonableness of those transactions. However, unusual amounts can vary for each respective payee and, thus, must be viewed in relation to other amounts received by the payee. It is difficult, then, to deem certain amounts unusual until they are separated by vendor. For instance, sorting a data set by amounts quickly will identify any payments in excess of \$3,000, but this amount only should rouse suspicion for certain vendors; rent payments regularly exceed \$3,000, but a \$5,000 payment to a cellular phone company certainly demands greater attention. If possible, investigators first should sort the transactions by payee and then by amount to determine unusually high or low payments to a particular type of vendor. Investigators may have to standardize the data before they conduct this analysis so that they can make proper comparisons.

Statistical Outliers

Statistical analysis presents other tactics to determine unusual transaction amounts. Though statistics may seem irrelevant to fraud investigations, in actuality, such analysis can reveal suspicious data that otherwise might go unnoticed.

Most of the statistical analysis investigators perform relates to means, standard deviations, and bell curve distributions. A quick review of the bell curve shows that the large majority



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(87 percent) of quantities in a distribution should fall within one standard deviation of the mean, while two and three standard deviations should encompass 95 and 99 percent of the quantities, respectively. Most spreadsheet programs easily can calculate the mean to determine which transactions fall on either end of the bell curve.

To examine a data set's bell curve distribution without

a visual representation, like a graph, investigators can run a simple spreadsheet formula to calculate Z-scores, or standard deviations. Amounts that fall within one standard deviation of the mean receive a Z-score of 1, amounts within two standard deviations receive a score of 2, and so on. The Z-score method can uncover statistical outliers that may not appear on the top or bottom of a list when sorted by amounts but are unusual nevertheless.

A Z-score analysis especially is useful when the number of transactions reaches the hundreds of thousands or even millions—the more transactions involved, the more useful such analysis will be. Large data sets, such as bank transactions, wire transfers, and payroll records, quickly can be analyzed for questionable transactions. Investigators successfully used this type of analysis in an embezzlement case when statistical outliers helped them uncover falsified checks.

Round-Number Transactions

Analyzing round-number transactions can prove useful for reviewing retail business transactions. Consumers can think about how often they have gone to the grocery store and their purchases totaled an even dollar amount; this rarely occurs because most businesses price their products just below the

next whole dollar amount (e.g., \$2.99) and because the price fails to reflect tax. Most spreadsheet and database programs can process a formula to quickly highlight transactions with round dollar amounts. Then, the investigator can examine this subset of round-number transactions to determine if any particular payer name, credit card number, or Electronic Benefit Transfer (EBT) card number repeats throughout the list. This technique proved valuable for a possible food stamp fraud case in which certain patrons received cash in exchange for charges to their EBT card. Searching the transactions for rounded dollar amounts quickly revealed a set of individuals whose cards showed a large number of such transactions.

Timing

The timing of financial transactions can be as important as the amounts and payees. Often, transactional information includes a date and time stamp. This date and time information indicates transactions that occur on weekends, after normal business hours, or on a regular basis. In the previously mentioned food stamp fraud case, the timing of the transactions proved important when several transactions occurred within a short time span. The quick time frame exposed

the sham transactions because these larger dollar transactions could not have been processed in such short periods of time.

When working with banks and other businesses that operate during standard business hours, transactions that occur outside the normal business day may indicate illegitimate activity. Investigators have uncovered instances of loan manipulation

“ Though statistics may seem irrelevant to fraud investigations, in actuality, such analysis can reveal suspicious data that otherwise might go unnoticed. ”

by noting changes in the master loan file that occurred after close of business, on holidays, or on weekends.

Again, this technique may require data standardization. Spreadsheets and databases each process formulae that convert numerical dates into days of the week and, thus, quickly can isolate transactions that occur on a weekend. Investigators can use similar formulae to note the time lapse between two transactions, which reveals

transactions that occur in rapid succession.

Counting

One of the easiest, most useful methods to discover unusual financial transactions is simply counting the number of transactions to individual vendors. Most personal and business expenses are paid monthly, and, therefore, most vendors receive 12 payments per year. As such, if an individual pays a landlord or a cellular phone provider 13 or 14 times per year, it might indicate a hidden payment to another vendor, an illicit payment, or a questionable transaction. By contrast, a vendor, employee, or person who receives just one payment in a 12-month period should draw suspicion—a vendor who receives too few payments may indicate money diverted to another purpose or person.

Duplicates

Identifying duplicate dates, amounts, or invoice numbers also can reveal questionable transactions. Obviously, not all transactions with the same amount or date indicate fraud, but the information can help begin investigators' analysis. Some common types of fraud involve double-paying an invoice and pocketing either the second payment or the refund. Searching for duplicates of supposedly unique invoice numbers

or transaction amounts highlights these double payments.

Some information that investigators can search for duplicates includes voucher numbers, check numbers, payment amounts, unusual payees, invoice numbers, SSNs, names, dates of birth, addresses, and phone numbers. In addition to double payments, duplicate analysis can uncover common addresses between employees and vendors, undocumented or unknown businesses, relationships between employees and vendors, and even collusion among employees.

Spreadsheets and databases do not have built-in formulae to identify duplicate transactions. But, investigators can find applicable formulae, macros, or scripts by searching the Internet.

Computer Audit Logs

An audit log or trail comprises an important piece of any accounting software. Most, if not all, accounting software maintains a log of changes to the data contained within the system, yet the majority of users fail to take advantage of these features. Usually, the software stores this information in a separate table and may track changes in such items as date, time, and user. This information can be crucial to prosecution.

For example, in one case involving a lumber company, a salesman committed fraud by changing invoices and

collecting the money from the original invoice in cash; the altered invoice effectively erased the original but used the same identification number. The company failed to realize this tactic, and the salesman embezzled large sums over the course of several years. The owner of the company finally became suspicious when a customer mentioned in passing that the salesman collected payments in cash. This information surprised



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the owner, so he asked to see copies of the invoices. Then, he traced the invoice numbers to sales receipts for other customers, which led him to discover that the lumber company's accounting software allowed personnel to edit finalized sales orders. The manager continued to search for altered sales orders until he realized that the software maintained audit logs of changes to such information, including the username of the editor and details about the specific changes.

Audit logs greatly can aid an investigator and streamline an investigation. Bookkeepers and accountants may not be aware of the audit features for the software they use, but most commonly used accounting systems maintain some kind of log. If an accountant or auditor is unaware if a system includes such a feature, they should consider contacting the software company directly.

Bank loan software tracks changes in loan amounts, rates, dates, times, users, and much more. The software captures this information in a table sometimes referred to as a "master loan file." If a bank employee is suspected of changing loan rates, due dates, or manipulating loan files in any respect, a quick review of this master file can reveal all the changes made by that employee. It also may provide a set of leads and a list of loans to which the employee had access.

Addresses

Addresses provide another useful data set to analyze. Address analysis can reveal information about relationships between employees and vendors and possibly expose fictitious vendors. Investigators can start by simply mapping the addresses in common mapping software. Most, if not all, mapping software allows the user to import many addresses at once. Some online applications

can perform address mapping as well. Plotting addresses and creating a visual representation of the information allows an investigator to quickly identify suspicious addresses, such as locations in other states or countries and vendor addresses located close to employee addresses.

Also, investigators can compare addresses against known post office box locations. Obviously, investigators quickly can spot the phrase PO Box when reviewing a data set; but, they may not recognize the address of a commercial postal service as easily. Instead of including a PO Box designation, fraudsters might list the address of the commercial postal service *building* to appear as a legitimate residential or business address. Investigators can consider purchasing a list of commercial mail box locations and compare them to the addresses provided to identify all such addresses.

Other Methods

Many of these types of analysis (e.g., addresses, statistics) can extend to more complex investigative techniques. If simple analysis has not yielded any leads in a data set, investigators can consider more advanced techniques, such as geocoding physical addresses, mapping IP addresses, conducting computer forensic analysis, or examining accelerating or decelerating

payments, among others. If investigators wish to learn a more advanced method of statistical analysis, they should consider Benford's Law, which states that in lists of factual, "real life" numbers (e.g., home prices, population sizes, or electricity bills), the leading digit distributes itself in a nonuniform pattern: 1 appears as the

“As companies begin to amass larger financial data sets, these types of analysis have become important to quickly and efficiently identify suspicious transactions.”

first digit about 30 percent of the time, and larger digits occur as the leading digit with decreasing frequency, to the extent that 9 appears as the first digit less than 5 percent of the time.² However, most people who compile fraudulent data distribute digits uniformly. Thus, simply comparing the distribution of the leading digits from a data set versus the distribution predicted by Benford's Law can reveal suspicious numbers.

Also, investigators should consider ways to combine the

above techniques to further narrow their search for questionable transactions. For instance, investigators can search a large data set for transactions that are statistical outliers, rounded numbers, and that occurred outside normal working hours. Another example includes identifying abnormal payments among a list of nonissued SSNs. Combining techniques allows investigators to further narrow their data set when the one method of analysis does not suffice.

CONCLUSION

Many financial analysis techniques available to investigators were not possible 15 or 20 years ago. The author mentions just a few of the possible methods to uncover unusual or fraudulent transactions. The appropriate techniques for a particular investigation directly depend on the type, quality, and amount of data provided. As companies begin to amass larger financial data sets, these types of analysis have become important to quickly and efficiently identify suspicious transactions. ♦

Endnotes

¹ The author bases the material in this article on techniques that he has used over the years. He learned to develop and apply these techniques through experience and discussions with other investigators, police officers, special agents, programmers, and accountants.

² For additional information, see <http://www.intuit.com/statistics/Benford's%20Law.html>.

Crimes Against Children Spotlight



Child Abductions Known Relationships Are the Greater Danger

By Ashli-Jade Douglas

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According to the National Center for Missing and Exploited Children (NCMEC), every year, more than 200,000 children are abducted by family members. An additional 58,000 are taken by nonrelatives with primarily sexual motives. However, only 115 reported abductions represent cases in which strangers abduct and kill children, hold them for ransom, or take them with the intention to keep.¹

Media news outlets have portrayed that abductors primarily consist of strangers or registered sex offenders (RSO), which has proven invalid in the past 2 fiscal years (FY). When a child is reported missing, members of the media advise parents to check sex offender registries to prevent their child from possible abduction or sexual victimization. However, FBI reporting indicates that RSOs are a minimal part of the problem. In FY 2009, an RSO was the abductor in 2 percent of child abduction cases; in FY 2010, this figure dropped to 1 percent.²

Although parents teach their children to stay away from strangers, most neglect to teach them not to allow anyone, even someone they know, to take them without parental consent. Additionally, children frequently are instructed to obey elders without question, adding to their vulnerability to offenders known to the child victim.

Over the past 4 years, the FBI has seen a decrease in abductions committed by a stranger or RSO. However, it is important to note that abductors with sexual intentions are, in fact, sexual offenders who have not yet been identified and, therefore, are unknown to local law enforcement agencies.

A majority (68 percent) of the child abduction cases the FBI's Child Abduction Rapid Deployment (CARD) team has assisted in has resulted in the identification of an offender who had a relationship with the child victim.³ Moreover, an RSO was involved in only 10 percent of the investigations, 5 percent of who knew the victim.

In FY 2009, 63 percent of child abduction cases involved an offender known to the victim; only 1 percent were RSOs.⁴ In FY 2010, 70 percent of child abduction cases resulted in the identification of an offender who had a known relationship with the victim; less than 1 percent of the abductors were RSOs.⁵

RSOs contribute to a miniscule part of the child abduction problem. In contrast to media reporting, the number of cases involving a registered sex offender is decreasing. In addition to the FBI reporting, NCMEC has revealed that there were no RSOs involved in AMBER Alert cases in 2009.⁶

Although abductors can vary in age, race, or physicality, the FBI assesses with high confidence that the majority of child abductors involved in FBI child abduction cases, CARD team deployments, and AMBER Alerts have a relationship with the child victim. Moreover, despite media reporting, the FBI confidently assesses that the majority of child abductions are committed by persons with a relationship to the child they abduct. ♦

Endnotes

¹ National Center for Missing and Exploited Children, press release, May 18, 2009; http://www.missingkids.com/missingkids/servlet/NewsEventServlet?LanguageCountry=en_US&PageId=4046 (accessed April 26, 2011).

² For the purpose of this article, the author defines abduction as “the initial report of a child taken without the knowledge of a parent or guardian.”

³ The FBI’s Child Abduction Rapid Deployment (CARD) team was established in 2009 to provide FBI field offices with a resource team of additional investigators with specialized experience in child abduction matters. These regional teams provide rapid, on-site response to provide investigative, technical, and resource assistance during the most critical time period following a child abduction. In 2009, the team had the most deployments since its inception.

⁴ Based on FBI investigations.

⁵ Ibid.

⁶ National Center for Missing and Exploited Children, 2009 AMBER Alert Report; http://www.missingkids.com/en_US/documents/2009AMBERAlertReport.pdf (accessed April 26, 2011).

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Wanted: Photographs



The *Bulletin* staff always is looking for dynamic, law enforcement-related images for possible publication in the magazine. We are interested in those that visually depict the many aspects of the law enforcement profession and illustrate the various tasks law enforcement personnel perform.

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Building an Effective Property Room

By Ceaser Moore



Law enforcement agencies around the country dedicate themselves to fighting crime, and their leaders seek innovative approaches to investigate and arrest offenders. Too often, however, officers pay little or no attention to what happens to evidence after they arrest a criminal. Every law enforcement officer knows that evidence must be protected and maintained for laboratory examination and presentation at trial, and many assume that their department always does so flawlessly. Yet, the storage facilities that have the crucial responsibility to maintain evidence and property seem to garner attention only after mishaps. To prevent these errors, law enforcement leaders must maintain a well-equipped property room for their agencies.

In early 2007, we at the Houston, Texas, Police Department (HPD) determined that we needed to completely overhaul our old property storage room, built in 1906. In June 2009, after years of

planning, designing, and building, we unveiled a state-of-the-art police property and evidence storage facility.

THE HOUSTON EXPERIENCE

Construction Process

First and foremost, we decided on the location, scale, and parameters of our future property room. To ensure an easy transition and to minimize costs, we chose to build the facility adjacent to the old one on a 2.4-acre site in downtown Houston. We then selected an architecture firm that could carry out all of our plans for a reasonable cost. With our chosen firm, we designed a 59,000-square-foot facility with 11,117 square feet of office space and 31,535 square feet of internal storage.

After we finalized these basic logistics, we determined how this new property room would drastically improve the old model. We planned a

moveable 16-foot, high-density compact mobile system for evidence storage, 15,277 square feet of exterior covered storage, and 1,141 square feet of freezers that reach 0°F.

Then, we worked with our officers to determine what technology we needed to properly equip the new facility. Based on this research, we installed high-tech security cameras, movable shelving, an inventory control bar coding system, and concrete vaults.

The room also features a self-contained fire system called Early Suppression, Fast Response, which protects high-pile storage commodities in all of the storage areas, and the building is 100 percent covered by sprinklers inside and out. Another suppression system prevents the pipes from freezing in the outdoor and freezer storage areas but delivers water in case of a fire. The facility's other security features include an emergency electric generator, which can handle the power load for the entire building. These additional features ensure that the HPD Property Room functions both securely and efficiently.

After this nearly 3-year design and construction process, in mid 2009, we spent 6 months transferring evidence from our former property room and opened the new facility for operation. We were excited to provide our officers with a property room they can trust to protect the evidence that they work so hard to gather.

In total, the construction of the new facility cost \$13.2 million. After this initial investment, the HPD reaps enormous benefits from such a well-equipped evidence maintenance system. In

an average year, the property room handles approximately 95,000 pieces of evidence, including money, weapons, electronics, biological evidence, and any other miscellaneous items that have been seized, stolen, or recovered. A staff of 42 employees, both officers and civilians, manages the facility, which operates 12 hours a day, 7 days a week for the public and 24 hours a day for law enforcement.

Lessons Learned

During the move, we identified our highest priority storage items—specifically, money, guns, DNA/biological evidence, files, and flammables/combustibles. Money and guns demand tight security, as these often are targeted in property room robberies. Additionally, DNA/biological evidence requires careful maintenance for laboratory analysis. Advances in DNA technology have clinched court cases and vindicated innocent defendants, but these sensitive items lose their value if not stored properly. Also, many property rooms overlook the importance of proper storage of flammable and combustible materials; fire accelerants must be removed or properly controlled to protect all stakeholders and evidence.

Initially, we did not transfer narcotics out of the old storage facility into the new one. Narcotics qualify as a hazardous item, and the Houston Fire Department maintains specific requirements for facilities that handle large amounts of hazardous material. After ensuring that we followed all necessary protocol to store these items, we transferred all narcotics evidence out of the old property room.



Houston Police Department's Old Property Room



Flammable Storage Cabinets



Model for Evidence Storage

Environmental Friendliness

Our department prides itself on strong community relations, so we kept the public's well-being in mind as we designed the new HPD property room. Therefore, we sought to minimize the facility's disturbance on the surrounding environment.

We assessed the room's potential environmental impact, which every agency should examine before they build. To guide our efforts, we sought U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification for our building.

The LEED certification ensures that we continue to minimize our environmental impact throughout the design, construction, and operation phases of the facility. As per LEED requirements, the HPD Property Room boasts several environmentally friendly attributes.

- Our contractors used recycled and regional materials throughout the construction process and diverted 75 percent of their construction waste away from local landfills.
- The building's construction supplies included materials extracted and produced locally or within 500 miles of the site.
- A thermoplastic roof reflects 65 percent of sunlight to reduce the mechanical and energy loads. Also, we designed the roof to withstand wind loads in excess of 110 mph.
- Motion-activated interior lighting sensors significantly reduce electricity consumption in less trafficked areas.
- Interior finish materials enhance the indoor air quality.
- The project's location on an urban infill site provides employees with easy access to public transit.

These minor changes add up to major results. Our assessments estimate that the building's energy consumption savings exceed 25 percent versus a conventionally designed building.

CONCLUSION

Above all, at the Houston Police Department we strive for a culture of continuous improvement

in our new property room. We want the facility's personnel to become the best in their chosen endeavor and for our field officers to feel secure that all evidence will be properly handled and maintained.

If your agency holds some interest in building a new property facility in the near future, consider the aforementioned ideas in your plans. Addressing these key areas will focus your efforts on areas that have substantial benefits for your organization. ♦

Captain Ceaser Moore serves in the Houston, Texas, Police Department's Property and Supply Division.



Houston Police Department Gun Room

The *Bulletin's* E-mail Address

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Suffolk County Police personnel performing an annual calibration on some of the department's personal radiation detectors (PRDs).

Digital Evidence

By STUART CAMERON, M.S.

As today's officers know, sources of electronic data have grown exponentially with the popularity of, for instance, text messaging, social networking, and e-mail. This variety of data represents a key component of police investigations and a potential source of evidence that could prove critical in supporting the prosecution of different types of

crimes. This highlights the importance of not only collecting such digital evidence but also having up-to-date procedures for its proper handling, archival, and maintenance, particularly to ensure its suitability for presentation in court.

Generating Data Files

Many types of equipment resulting from advances in

technology exist that create additional electronic data files. For instance, the transition from conventional film photography to electronic methods has resulted in digital pictures that are electronic data files as opposed to negatives on a tangible piece of film. Similarly, each time personnel use a conducted energy device, such as a TASER, the unit creates a data file that

documents the number of times it was fired and the duration of each use. As yet another example, many departments now employ digital video cameras in their patrol units where the image actually is a series of ones and zeros as opposed to a magnetic recording on a piece of tape.

A lot of the detectors and sensors now used by hazardous materials response teams and bomb squads also create electronic data files. In an age of terrorism, suspects could go free if personnel do not properly document and save the digital evidence of these criminal acts. Terrorists who attempt to employ a weapon of mass destruction may face a trial in a conventional courtroom, rather than some other type of tribunal, such as a military commission. If this occurs, authorities will need to preserve and maintain the integrity of the evidence generated by these units in a manner acceptable under the criminal rules of evidence.

Additionally, newer instruments used by law enforcement, such as radiation detectors, radioisotope identification devices (RIID), gas meters, hazardous materials identification systems, and digital bomb X-rays, generate electronic readings and provide the opportunity to export them via a data cable or electronic

memory card. While equipment operators certainly can testify, for instance, to what a meter said, prosecutors clearly would benefit from having the electronic file available to confirm this testimony. Agencies should identify all equipment they possess that creates this type of electronic data and have appropriate standard operating procedures in place.¹

Preserving Electronic Evidence

Law enforcement personnel must properly preserve digital evidence to make it suitable for presentation in court. Techniques may vary depending upon the technology, but officers have several considerations. They must have a secure storage location; sufficient back-up copies, as lost

evidence can place prosecutions in jeopardy; and proof that the data has not been altered—that it is authentic.² Officers must ensure the long-term integrity of evidence. Further, investigators need to recognize that the chain of custody is just as important with digital evidence as it is with physical types, and they should have a written log to document any occasions in which the media goes in or out of storage or changes hands. As one fairly simple means of preservation, personnel can transfer digital information onto a read-only, nonrewritable CD-ROM. Investigators should make two copies and ensure that they put on each disk the operator's name and signature, as well as the date and case number, and then treat each CD-ROM as they would any other item of

“

Law enforcement personnel must properly preserve digital evidence to make it suitable for presentation in court.

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Inspector Cameron is the commanding officer of the Suffolk County, New York, Police Department's Special Patrol Bureau in Ronkonkoma.

evidence, establishing a chain of custody and securely storing the media.³

Concerning detectors or sensors with a removable media card, at the scene of the investigation, officers can seal the card in an envelope with the operator's name and signature, the date, and the case number written on the outside. A secondary process involves uploading the data onto a secure server while employing a method, such as the hashing function, to ensure the data's integrity. Investigators then can store the card in a secure location.⁴

Personnel using electronic equipment must ensure the

accuracy of the date and time displayed on the unit. In many instruments, the date and time will default to an earlier period if the batteries become depleted. Then, restoration of power can result in readings that appear out of sequence. Some detectors will not afford the operator the ability to reset the date and time without a computer interface cable. An improper reading from one instrument could result in members of the jury questioning the readings from others, and they may perceive incompetence or a lack of care on the part of the operator.

Due to the inherent time lag between arrest and prosecution,

officers should recognize that data files stored for a particular item of equipment may need proprietary software to retrieve and read the display. Prior to a courtroom prosecution, the detector or sensor used to gather the evidence could be replaced with a more current model or one from a different manufacturer. Personnel must retain copies of the proper software unless they have saved the data files in a universal format or exported the results in hard copy format and maintained those results as evidence. If they do not maintain the proprietary software, investigators may not be able to open the archived data files. As a general rule, personnel should store digital evidence in its original, as well as nonproprietary, format to ensure accessibility.⁵

Most law enforcement officers know that they should use a clean sheet of paper, new notebook, or fresh roll of film to document each crime scene to prevent details from other cases commingling with the one at hand. This rule also applies to digital evidence, such as that produced by a sensor. Despite the reusability of some units of storage media, merely erasing them is insufficient; they must be forensically prepared, or wiped. Investigators must not only remove any vestige of the previous contents but also ensure that only known data



Digital bomb x-ray image of a suspicious package that appears to contain a hand grenade.

is written to each sector of the media. Personnel usually accomplish this with software that will overwrite a known character, such as 0 or 1, to the entire device and eliminate all of the previous data.⁶ Agencies should be prepared with a mitigation strategy for detectors and sensors that store data internally if they intend to use the readings as digital evidence. If available, a similar device employing removable storage media may be easier to sterilize and would allow the original removable storage media to be archived, if necessary, without the loss of the entire instrument. Alternatively, a digital photograph could be taken of the relevant readings from the device's screen to document the events, and those digital photographs could be preserved.

Operators also should be aware that the names of the computer files exported by sensors often contain potentially important *metadata*, such as the sensor's unique identification number and the date and time of the file creation. Accordingly, personnel should not change file names in any way. Further, if a reading is taken and an error is made, the created data file should not be deleted. Rather, this error should be documented and later explained during the operator's testimony. Deleting files may create a gap in the

sequential numbering system and could lead to the appearance that someone intentionally discarded the evidence.

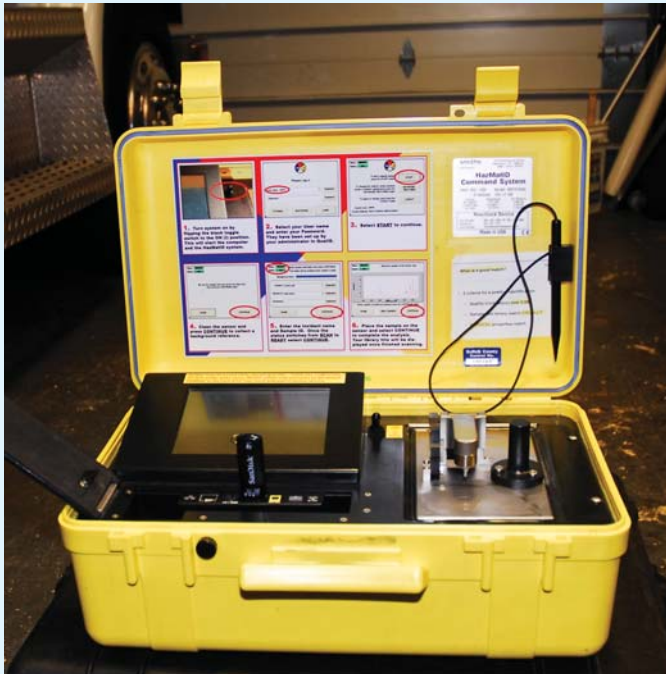
A bomb squad almost always will accompany radiological incident responders to rule out any threat of explosives. Many of these squads have made the transition from conventional film X-ray equipment to digital bomb X-ray devices. The results obtained from digital X-rays generally allow better analysis than conventional film counterparts, and, like digital photographs, personnel can electronically archive them for

later presentation in court. Often, the digital X-ray is the only record of what a device looked like prior to the rendering of safe operations.

If the digital X-rays reside solely on the computer associated with the digital X-ray system, investigators would find it very difficult, if not impossible, to introduce them as evidence at a later date. Saving these images in a manner consistent with other digital photographs would mitigate this problem. Jurors generally will be familiar with electronic devices and may question the credibility of



Radioisotope identification device (RIID) connected to a laptop. This unit can identify various radioactive isotopes. The spectra files can be downloaded onto a laptop computer that has the proper transfer software installed using either a serial cable or a USB cable.



HazMat ID system with a USB drive inserted into it. This system can identify thousands of different substances, and the results can be downloaded onto a USB drive.

an officer who could have, but did not, back up his testimony about a meter or sensor reading simply by downloading an electronic file. The lack of this digital evidence may not result in the loss of a conviction, but it could make obtaining one more difficult.

Documenting Terrorist Activity

A wide range of digital evidence can support a terrorism prosecution. For example, a thwarted attack using a radiological dispersal device could create a vast amount of evidence potentially lost without proper procedures

and planning. In this case, the initial detection may have resulted from an officer's small belt-worn personal radiation detector. Investigators carrying these devices may not realize that an internal data-logging feature has stored the critical radiation readings, and their agencies might not expect them to know how to download this material as it often requires a computer interface.

While these detectors are relatively small, many of them log detections and save this data internally until the device becomes full, at which time the evidence can be overwritten. Data also can become

lost if the batteries die. Thus, officers must have proper forethought and ensure that they save data quickly. Otherwise, this initial detection information could be forfeited, and the only record of it would be through the device operator's oral testimony without any further support.

The next step in the thwarted attack might be the use of an RIID to identify the type of radioactive material and its potential for harm. Certain radioactive isotopes work better than others in creating effective dispersal devices. Accordingly, the accurate identification of the isotope is critical in determining the danger posed. In this regard, RIIDs capture data and provide a preliminary assessment.

For a higher degree of assessment, during a process known as "reach back," officers can use this type of device to electronically transmit data within an e-mail to a *spectroscopist* who can "read" the digital signature created by the energy generated from the material and then analyze this data and verify the internal assessment from the RIID. This process creates a tremendous amount of potential digital evidence that personnel might overlook or delete unless they recognize it in advance.

The data file from the RIID, the e-mail message used to

transmit it, and any photographs sent all represent potential sources of digital evidence. Some agencies use an electronic template form to provide the incident background information during the reach back process, thereby creating more potential evidence.

Due to the critical nature of an incident, many departments use special operations commands to operate the identification devices. Because these personnel primarily focus on assessing a situation to resolve it without causing harm, agencies need to ensure they are trained to recognize that their assessment process is creating important digital evidence.

Calibrating and Testing Equipment

Creating usable electronic evidence also requires agencies to properly maintain and calibrate the instruments generating it, much like they service their speed-detection and alcohol-testing instruments. Of course, personnel need proper training to do this.

Departments also must retain records of calibration and repair for potential presentation to the court. While this process may seem complicated, agencies now consider it a matter of routine.

Additionally, officers who use these sensors and detectors must have knowledge of any

set-up testing required before use. Personnel who have used radar guns for speed enforcement are well familiar with tuning-fork and internal-calibration checks that they must complete and document before deploying the device to issue tickets.

Similarly, many of the sensors and detectors used by hazardous materials teams and bomb squads require investigators to perform testing

“Creating usable electronic evidence also requires agencies to properly maintain and calibrate the instruments generating it....”

procedures before use. Agencies need to ensure that personnel not only perform the tests but record the results in the same way they do with enforcement equipment, recognizing the potential for usage data, such as material detection, to become crucial evidence needed in court. Departments should retain any documentation from the manufacturer, such as operator manuals, as controlled

documents. Personnel also should test all equipment before use to ensure correct operation.

Conclusion

Law enforcement agencies must establish procedures for handling digital evidence created through the advanced technology now commonplace in the profession. Taking the time to recognize and develop procedures for devices that create electronic files, establish standard operating procedures to properly save this downloaded data, and institute procedures that explain any deviations from established standards will aid the prosecution, instill confidence in jurors, and highlight the professionalism of law enforcement officers and their agencies. ♦

Endnotes

¹ Scientific Working Group on Imaging Technology (SWGIT); http://www.theiai.org/guidelines/swgit/guidelines/section_15_v1-0.pdf.

² Scientific Working Group on Imaging Technology (SWGIT); http://www.theiai.org/guidelines/swgit/guidelines/section_1_v3-2.pdf.

³ Scientific Working Group on Imaging Technology (SWGIT); http://www.theiai.org/guidelines/swgit/guidelines/section_13_v1-0.pdf.

⁴ Ibid.

⁵ Scientific Working Group on Imaging Technology (SWGIT); http://www.theiai.org/guidelines/swgit/guidelines/section_15_v1-0.pdf.

⁶ J. Philip Craiger, “Computer Forensics Procedures and Methods”; <http://ncfs.ucf.edu/craiger/forensics.methods.procedures.final.pdf> (accessed September 2, 2010).

Notable Speech

What Does It Take to Excel?

By Wyn Lohner

It is with great honor that I stand before you today. For 16 of the past 19 weeks, you have had the opportunity to train under some excellent instructors at this academy. What they have taught you are the mechanics of police work, the knowledge and skills you will need to function as police officers. During the next 16 weeks, most of you will add to and refine that knowledge and those skills with training officers at your agencies, and, then, you will begin serving your communities. If you carry that training forward, continue to train, work hard, and adhere to policies, you all should have successful careers and meet the standards in each of your agencies.

But, how do you exceed those standards? What does it take to be the best of the best—a “5 percent”? To be the officer that every other officer wants as backup when things are going south? To be the officer that every citizen wants to show up at their house when they are in need?

Well, through the years, I have read many articles written by experts from around the world regarding what they believe to be the characteristics of officers and deputies who excel. I have yet to find a list that I feel is comprehensive. So, today, I would like to share with you my list, what I feel are the nine characteristics of police officers who rise above others whether they are striving for that or not.

1) Pursue Integrity

If you are not an officer who can be trusted, one that can be counted upon to get the job done, whether it's 2:00 in the afternoon, 2:00 in the morning, or whether there is a supervisor on duty, you not only will fail to excel but you will not meet standards and most likely will have a short career. Everything in law enforcement works outward and

upward from the foundation of integrity. Integrity is much more than just honesty. It is much more than just being a good person who tries to do what is right. Without integrity you never will be able to excel in an operational capacity, in a training situation, or in a service function. Essentially, integrity is crucial in all areas of police service and your life.

2) Remain Mentally Prepared

One thing that I can guarantee you is that you never will receive all the training that you desire, your agency wants you to have, or that you truly need. However, each day will present you with multiple training opportunities. Every situation you handle throughout your career can be dissected in your mind and, with other officers, provide you with an opportunity to learn and do it better next time. Every idle moment that you have can be used to mentally process any situation imaginable, from tactical to investigatory. You mentally can respond to an active shooter at the local high school, a barricaded subject in the courthouse, an assault in progress at a residence, or a silent alarm at a bank. You mentally can process your response

Chief Lohner of the Baker City, Oregon, Police Department delivered this commencement speech to the 322nd basic police class of the Oregon Public Safety Academy on January 28, 2011.



to a driver with a gun getting out of a vehicle during a traffic stop or your safe approach to respond to a report of shots fired. Ask the tactical experts in your agencies for the best techniques in these situations and continually prepare for them.

3) Strive to Do the Most

When you arrive at a call for service, whether it is the homicide of the most important person in your community or, simply, a homeless person sleeping in the bushes, you can choose to do either what is minimally required, or you can ask yourself, “What is the most I can do?” If you choose the latter, it means you will take every step possible to resolve the situation and help those in need. Some may call this community policing, some may call this problem-oriented policing, but I just call it doing what is right—providing the service that citizens want and deserve from their police officers. This same attitude also should carry over into training. Whether it is on the mats, at the range, or in a classroom, you will decide how much effort you are going to put into the training. Do not cheat yourself, your department, or your community; you will get the most by giving the most.

4) Do Not Judge Others

The one thing you will learn in life, especially when providing police services, is that everyone has a story. I am not talking about the nonsense many people will try to make you believe, but the story behind what has happened in peoples’ lives that truly defines them. Now, do not confuse this with assessing people because properly assessing

people you contact by their actions and your knowledge is an officer safety must. I am talking about making a decision about someone based on looks and lifestyles. Always remember that unless you have walked in their shoes and faced their life trials, you never should judge them. The old saying “Never judge a book by its cover” holds true in law enforcement. In my career, I have found true American heroes hiding inside of shells that many would consider gutter trash. You never will know everyone’s story, but if you treat everyone with the respect and dignity each human being deserves, you will go far.

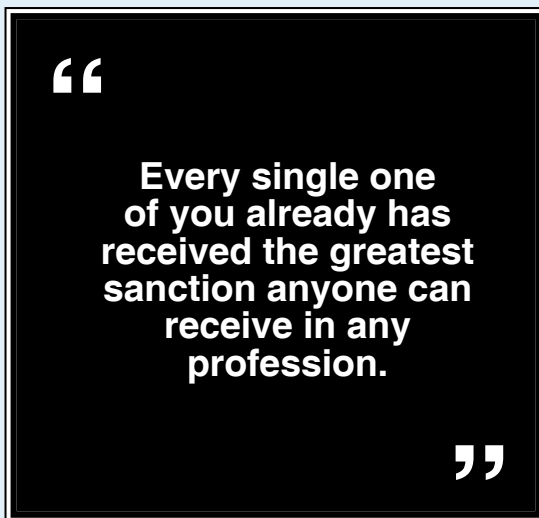
5) Actively Listen

Listen, listen, and listen some more. Listen to your trainers as they will inform you of the skills necessary to succeed and survive. Listen to your peers as they will tell you what has worked and not worked for them. Listen to your supervisors as they will give you guidance in your careers. Listen to your community as they will tell you what is important to

them. Listen to the witnesses, victims, and suspects as there are always, always at least two sides to every issue you will face. And, most important, listen to your family and your nonlaw enforcement friends as they will tell you when you are going off course in your life and heading for disaster.

6) Set Priorities at Work

Aside from officer safety, which always has to be the priority, there are three areas of focus when you put on that uniform: you, your agency, and the community you serve. Properly prioritizing them is paramount to your ability to excel. Many officers put themselves at the top of that list as they



strive for glory and self-satisfaction. Generally, these officers put themselves at the front of every list in their lives, which commonly has a reverse effect and only ensures they never will meet their full potential. Some officers put their agency at the top of the list. On my list, I put the community first because those are the people I was hired to serve. Your primary mission in police work is to protect the citizens in your jurisdiction and create the safest environment possible. That means the community and its needs come first.

7) Set Priorities in Your Life

To be the best of the best in police work, you have to have a balanced life. You always have to remember what is most important in your life and work hard at not losing sight of that. Look out into this audience: Most of you will see what really is important in your lives. It is not the men and women in uniforms, wearing the badges and patches representing your agencies. What is important out there are your husbands and wives, your children, your moms and dads, your aunts and uncles, your grandparents, all of the family you hold dear. Today, after being separated from them for so many months, it probably is pretty easy to see their importance in your lives. But, 5, 10, and 15 years into your career when you are and have been spending the majority of your waking hours with other cops, it most likely will become increasingly more difficult. Please, do not ever forget that your family is more important than your career and that law enforcement is only your profession, not your life. You must set priorities and ask your family and friends to hold you accountable. And, when they try to hold you accountable, listen to them.

8) Take Care of Yourself

Emotional health is one of the most overlooked and neglected aspects of a police officer's life. Sadly, you are going to see things and deal with situations that will have a negative impact on your life. You cannot tell a parent that their son

or daughter never is coming home again or stare into the eyes of a lifeless child and not have it affect you. These mental traumas in police work have a cumulative effect, and every person has a breaking point. When you think about it, it becomes easier to understand why men and women in police services abuse alcohol, get divorced, and commit suicide at over twice the rate of most people in other professions. You must find ways to productively release those traumas. Physical exercise by any method you choose is a wonderful way to positively release some of your anxieties. But, the best way is simply to talk about it. Police chaplains, church leaders, grief counselors, and trusted friends are great choices as confidants you can talk with. Open up about the situations you have faced and express to them how you feel. Believe me, being cynical and making jokes about the situations with other cops is not a healthy release. And, although venting to your spouse may relieve your burdens, they, unfortunately, will start accruing them because of their love for you. Find a trusted person outside of your inner circle who really is good at listening and lean on them. If you do not take care of yourself, and if you let those traumas build, it will slowly tear you down and tear down your family.

9) Develop and Maintain a Heart for Service

If you want to excel at work and in life, this trait is one of the most important ones you can possess. The problem, though, is that there are no training programs to teach you how to care about others. It has to come from within you. To have a passion, an overwhelming desire, to help others is an amazing trait in a police officer and in any human being. Some people choose police work as a career simply because it is an occupation with decent pay, health insurance, and a retirement. They do not really care if they are making a difference in peoples' lives. Do they make bad police officers? Not necessarily, but it will limit their ability to truly make a positive impact in their

communities, and it will keep them from excelling. Fortunately, there are many people who are drawn to police work because they feel the calling—to help others by protecting and serving them. It takes a very special person who is willing to get up each day and go to work, knowing that what they are truly getting paid for is what they may have to do. Other than being an American soldier, police work is the only other profession where every day you know that you may have to give up your life to protect others. That is the greatest sacrifice of all and the greatest demonstration of love.

Conclusion

As you leave here today and go back to your communities, please take this thought with you and carry it through your careers: Every single one of you already has received the greatest sanction anyone can receive in any profession. You will find it in Scripture: Matthew 5:9 says, “Blessed are the peacemakers, for they will be called children of God.” Thank you for your service, good luck, and may each of you reach your full potential and truly become the best of the best. ♦

Bulletin Honors



St. Charles, Missouri, Police Department Fallen Officer Memorial Statue

On May 4, 2010, the Fallen Officer memorial Statue was dedicated to those officers who made the ultimate sacrifice while serving the citizens of St. Charles, Missouri. The memorial is located in the front of the St. Charles Police Department Headquarters, near the public entrance, and was made possible through a cooperative effort between the city of St. Charles and local business leaders. The statue, dubbed “Officer Patronus” (Latin for *Protector*), was named by the men and women of the St. Charles Police Department. Officer Patronus stands in memory of those who died in the line of duty and in respect for those who serve today.

Leadership Spotlight

Leadership Legacies Reflections on Retiring

After a rewarding and gratifying 25-year career as a special agent with the FBI, I recently retired to redirect my energy toward family matters. The conclusion of my employment with the FBI gave me the opportunity to look back at my career to determine the traits, behaviors, and qualities of successful leaders that I interacted with in law enforcement, with the goal of then applying these characteristics in my personal life.

I recalled that true leaders, for the most part, are individuals who show genuine concern and compassion for their people. I do not believe anyone learns this from reading books on leadership or law enforcement. Authentic care about people comes from someone's upbringing, religion, schooling, and experiences.

I remembered that actual leaders want to help their people handle difficult cases and matters and are not satisfied with simply maintaining the status quo. These leaders sincerely understand the mission and goals of their organization and aggressively pursue these objectives by active involvement in achieving results. They do not micromanage the professionals who work for them. Instead, notable leaders offer guidance and mentoring when appropriate and allow their folks the independence to fail and learn from these failures when necessary.

I reaped the most productive leadership lessons during my observation and interaction of two-way dimensional conversations with my supervisor. Natural leaders will take suggestions, ponder alternate courses of action offered by team members, and not feel insulted if their proposal is not adopted. Bona fide leaders sometimes are an actual follower and member of their group. Leadership can be accomplished effectively by not always being in control of every decision in every matter.

While the aforementioned leadership qualities will suit me well in my personal life,

the most important reflection I have upon retirement is that I always strive to serve the

public with compassion and fairness, with a rigorous obedience to the rule of law. It was not monetary awards, promotions, case closings, or statistical accomplishments that made my career satisfying. Rather, my career was fulfilling simply by consistently adhering to the above noted values. I will strive to maintain the same dedication to duty and sound ethical and moral principles upon the conclusion of my career as when I started my journey as a special agent. ♦

Mr. Doug Merel prepared this Leadership Spotlight after his retirement as an instructor in the Leadership Development Institute at the FBI Academy.

Reflections

An Overview of the Americans with Disabilities Amendments Act of 2008

BY LISA A. BAKER, J.D.

In 1990 when the Americans with Disabilities Act (ADA) was signed, many heralded it as the end to barriers in the workforce for those with disabilities. While filled with initial hope, disability advocates soon became disillusioned as a result of what they perceived to be a judicially driven narrowing of the ADA's reach. Congress responded to this frustration by enacting the Americans with Disabilities Amendments Act (ADAAA), effective January 1, 2009.¹

This article provides an overview of the changes brought about by the ADAAA, which changed how the fundamental determination should be made of whether an individual has a disability. In addition to understanding what the ADAAA *did* address, law enforcement managers also should be aware of what has *not* changed. To this end, the article clarifies that the ADA continues to protect only those able to perform the essential functions of the job and allows for employers to impose hiring and employment standards that are job related and consistent with business necessity.



Overview of the ADA

The ADA prohibits employers from discriminating “against a qualified individual with a disability because of the disability of such individual in regard to job application procedures, the hiring, advancement, or discharge of employees, employee compensation, job training, and other terms, conditions, and privileges of employment.”² The ADA exists to ensure that individuals with a disability have access to equal employment opportunities and are judged based on their ability to do the job, not their disability. A “qualified individual” meets the prerequisites for the job, such as education and work experience and, despite a qualifying disability, can perform the essential functions of the

position with or without a reasonable accommodation.³

The threshold inquiry is whether the individual has a disability within the meaning of the ADA. *Disability* is defined as a physical or mental impairment that substantially limits one or more major life activities, a record of having such a disability, or being “regarded as” having a disability.⁴ The definition and interpretation of what constitutes a disability was the focus of Congress’ efforts to reinvigorate the ADA. In enacting the ADAAA, Congress expressly overruled several Supreme Court rulings that narrowed the definition of disability and rejected a provision within the regulations enacted by the Equal Employment Opportunity Commission (EEOC)

implementing the ADA, finding that it restricted the definition of disability contrary to the original intent of the act.⁵

Congress’ efforts focused on the Supreme Court’s rulings in *Sutton v. United Air Lines, Inc.*⁶ and *Toyota Motor Manufacturing, Kentucky, Inc. v. Williams.*⁷ These cases focused on the interpretation of the definition of disability with the Court stating that the definition must be “interpreted strictly to create a demanding standard for qualifying as disabled.”⁸ The Court held that the key terms of the definition, including *major life activity* and *substantial limitation*, should be interpreted narrowly. Major life activity should only mean those activities of “central importance to most peoples’ daily lives.”⁹ The Supreme Court interpreted the substantial “limitation prong” as requiring a showing that the disability “prevents or severely restricts” an individual from performing a major life activity.¹⁰ The Court also read the ADA to require consideration of the effects of corrective measures in determining whether someone is disabled. In *Sutton*, the Court held that “a person whose physical or mental impairment is corrected by medication or other measures (eyeglasses in this case) does not have an impairment that presently ‘substantially limits’ a major life activity.”¹¹ Thus, the



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“**...the ADA continues to protect only those able to perform the essential functions of the job and allows for employers to impose... standards that are job related and consistent with business necessity.**”

use of corrective measures that effectively overcame the limitations caused by the impairment led to a lack of protection under the ADA. These decisions narrowed the pool of individuals who could seek protection in federal court under the ADA.

Major Life Activity Expanded

The ADAAA rejects the Supreme Court's assessment that a major life activity is one of "central importance to most peoples' daily lives"¹² in favor of a less stringent standard. In addition, the ADAAA provides for a more expansive view of what constitutes a major life activity. The definition includes not only the traditional activities of "caring for oneself, performing manual tasks, seeing, hearing, walking..." but also major bodily functions, such as the "functions of the immune system, normal cell growth, digestive, bowel, bladder, neurological, brain, respiratory, circulatory, endocrine, and reproductive functions."¹³ No longer will plaintiffs have to demonstrate how a hidden intrinsic condition impacts the level at which they function with respect to traditional tasks. For example, an individual who suffers from Parkinson's disease will not have to demonstrate what traditional activity is impacted by the condition but rather the impact of the

condition on neurological and brain functioning.

Determination of Substantial Limits

In an effort to expand the reach of the ADA, Congress clarified that the word *substantially* should be interpreted more generously and not require a showing of "prevents or severely restricts." Rather, as described in the regulations implementing the ADA, the term *substantially limits* should allow for "expansive coverage, to the maximum extent permitted by the terms of the ADA."¹⁴ The regulations continue by stating "[a]n impairment is a disability within the meaning of this section if it substantially limits the ability of an individual to perform a major life activity as compared to most people in the general population."¹⁵

The ADAAA also rejected the perspective that in assessing whether someone is disabled, consideration of whether routine, mitigating measures alleviate

the effects of the disability is appropriate in favor of an interpretation that states consideration of the existence of the disability must be made without regard to corrective measures except in the case of ordinary eyeglasses and contact lenses.¹⁶ For example, hearing-impaired individuals who with the use of a hearing aid can hear at a level comparable with the rest of the general population are considered disabled within the meaning of the ADA if their unaided hearing is substantially impaired.¹⁷

Congress also clarified that conditions in remission or episodic in nature constitute disabilities if the condition would substantially limit a major life

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activity when active.¹⁸ This was designed to reject judicial rulings concluding that certain conditions are not disabilities within the meaning of the ADA because the individuals were only impaired during infrequent episodes. For example, in a case involving an epileptic, the court found that the condition did not constitute a disability because the individual was only sporadically affected by short seizures in which he experienced tremors and could not speak.¹⁹

“Regarded As” Prong

Congress also lessened the threshold needed to satisfy the regarded as prong in the definition of disability. Previously, to satisfy this component of the definition of disability, individuals had to establish that the employer regarded them as having a disability that substantially limited a major life activity.²⁰ With the enactment of the ADAAA, persons now meet the definition of having a disability if they establish that they have been the victim of unlawful discrimination because of an actual or perceived disability “whether or not the impairment limits or is perceived to limit a major life activity.”²¹

What Remains the Same

While the pool of individuals who may claim the existence of a disability certainly

has expanded with the recent changes brought about by the ADAAA and its regulations, what remains unchanged is that if an individual cannot perform an essential function the job requires, that individual is not shielded from adverse employment-related consequences. For example, in *Hennagir v. Utah Department of Corrections*,²² a physician’s assistant employed by the Utah Department of Corrections (DOC) lost her

“
In enacting the ADAAA, Congress expressly overruled several Supreme Court rulings that narrowed the definition of disability....
”

job when as a result of numerous physical impairments she could not complete a mandatory safety training requirement. While this case predates the effective date of the ADAAA, it is insightful in that it interprets the second requirement of the ADA, that individuals seeking protection under the ADA must establish that they are *qualified* individuals with a disability, meaning they can perform the essential functions of the job

with or without a reasonable accommodation.²³

In *Hennagir*, the DOC began requiring all medical and clinical staff members at its Central Utah Correctional Facility to take and pass Peace Officer Standards Training (POST) certification. This decision followed a lengthy period of review and consideration by management after an attack on a medical technician by an inmate in the clinic. POST certification included an assessment of physical strength, flexibility, and endurance. Initially, the DOC explored the idea of exempting existing staff from this requirement but decided against that approach.

In 2002, medical staff at this facility began participating in the training. Hennagir attended the training but, due to various physical impairments, did not participate in the physical components. Because she did not obtain the POST certification, Hennagir was informed that she had to transfer to another facility in a location in the state where the certification was not required or she would be fired. Hennagir refused the transfer, took medical leave, and, eventually, went on long-term disability to have hip and shoulder surgery. During her absence, she pursued a claim of unlawful discrimination on account of her disability. This led to attempts by the EEOC and DOC to

resolve her employment situation, culminating in the DOC's offer of a position at her current facility that entailed reviewing and auditing patient care but did not include her providing care.²⁴ She refused this offer and, subsequently, was terminated, leading her to sue under the ADA.

The Court of Appeals dismissed her claim, concluding that she failed to establish that she was a qualified individual with a disability.²⁵ It found that her physical condition did constitute a disability within the meaning of the ADA.²⁶ The court then focused on whether the POST certification was an essential function of the job and if any reasonable accommodation existed that would enable her to perform this necessary function, recognizing that she held the burden of proof to establish her ability to perform the essential functions of the job.²⁷

The court began its analysis by deciding "whether [DOC] actually requires all employees in the particular position to satisfy the alleged job-related requirement."²⁸ The evidence clearly established that all physician's assistants at the facility in question must be POST certified; the court found that no exceptions should be made. The court also rejected Hennagir's argument that because she was hired under a policy that did not require the certification and she successfully performed her duties for many years, it must not

be essential. The court rejected this argument, stating:

[T]he essential function inquiry is not conducted as of an individual's hire date. The ADA does not limit an employer's ability to establish or change the content, nature, or functions of a job. We must look instead to whether a job function was essential at the time it was imposed on Hennagir.²⁹

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The court then considered the DOC's position that the requirement constituted an essential job function at the time it was imposed, concluding that it is and rejecting Hennagir's claim of unlawful discrimination. In reaching this decision, the court recognized that it must "weigh heavily the employer's judgment regarding whether a job function is essential."³⁰ In this regard, the court referenced the statements by DOC executives regarding

the daily risks to medical personnel that exist when interacting with patients and rejected Hennagir's argument that because she had worked for many years in this capacity and never had an altercation that it must not be essential. In rejecting Hennagir's argument, the court referred to a similar situation in which a deputy sheriff had argued that because an altercation seldom occurred, that weighed against its critical nature. In that case, the court concluded:

Although a deputy [sheriff] may be required to physically restrain inmates only infrequently, the potential for physical confrontation with inmates exists on a daily basis, and the consequences of failing to require a deputy to perform this function when the occasion arises could be a serious threat to security.³¹

As Hennagir's position required regular contact with inmates, the court accepted the DOC's determination that the certification requirement is essential. Hennagir then argued that a reasonable accommodation to her condition would be for the DOC to enable her to remain in her position. However, the court rejected this argument, recognizing that the theory behind a reasonable accommodation "is to enable an employee to perform the essential functions of h[er] job; an employer is not required to accommodate

a disabled worker by modifying or eliminating an essential function of the job.”³²

The DOC is not required to eliminate an identified essential function, and no reasonable accommodation was found that would enable her to perform this job requirement. Accordingly, her termination did not violate the ADA.

The defensibility of identifying and enforcing job requirements determined to be essential is illustrated in *Allmond v. AKAL Security, Inc.*³³ In this case, a court security officer employed by a private contractor providing court security for the U.S. Marshals Service was fired after he could not pass a newly instituted hearing test developed after a study by Dr. Richard Miller, Director of Law Enforcement Medical Programs for the Office of Federal Occupational Health. In his findings, Dr. Miller identified several hearing-related tasks deemed essential to the court security officer position and recommended changes to the medical standards for the position. These changes included a recommendation that court security officers pass a hearing test without the use of a hearing aid to qualify for the position.³⁴

The court security officer position required passing pre-employment and annual medical examinations. Allmond was employed by the contractor and

worked at a courthouse, but he failed the medical examination with the new hearing test. His employer subsequently fired him, consistent with the contractual requirement with the Marshals Service.³⁵ He sued, claiming unlawful discrimination based on his disability.

**“
...if an individual
cannot perform an
essential function the
job requires, that
individual is not
shielded from adverse
employment-related
consequences.
”**

Rather than assessing whether Allmond had a protected disability, choosing to assume that he did, the court ruled against him on the basis that passing the hearing test without a hearing aid is job related and consistent with business necessity. The court recognized that qualification standards, such as the hearing standard in this case, that exclude individuals with a disability are generally prohibited. However, disability laws provide employers with an affirmative defense for claims of unlawful discrimination if the employer can show that the

standard or test is job related and consistent with business necessity.³⁶ In describing the reach of this defense, the court stated:

Job-relatedness is used in analyzing the questions or subject matter contained in a test or criteria used by an employer in making hiring or promotional decisions. Business necessity, in contrast, is larger in scope and analyzes whether there is a business reason that makes necessary the use by an employer of a test or criteria in hiring or promotional decision making.³⁷

Applying these standards, the court held that the hearing-aid ban at issue is job related as it assessed a medical qualification—a level of unaided hearing—necessary to perform the essential functions of the job of court security officer. In addition, the hearing aid ban is consistent with business necessity as it was adopted “to ensure that all officers can perform their job safely and effectively in the event they must rely on their unaided hearing.”³⁸ Accordingly, the business necessity defense bars Allmond’s claim of unlawful discrimination.

Conclusion

As a result of several Supreme Court cases interpreting the ADA, Congress intervened

and enacted the ADAAA with its stated purpose “to carry out the ADA’s objective of providing ‘a clear and comprehensive national mandate for the elimination of discrimination’ and ‘clear, strong, consistent, enforceable standards addressing discrimination’ by reinstating a broad scope of protection to be available under the ADA.”³⁹ What also must be factored into employment decision making in this context is not just the threshold inquiry of the existence of a disability but also the need to assess what aspects of the job are essential as opposed to marginal job functions, whether the individual can perform those essential functions with or without a reasonable accommodation, and defending employment standards that may have an adverse impact on an individual otherwise protected by the law. ♦

Endnotes

¹ ADA Amendments Act of 2008, Pub.L.No. 110-325 (2008). On March 25, 2011, the Equal Employment Opportunity Commission (EEOC), responsible for overseeing the implementation of the Americans with Disabilities Act (ADA), published regulations and interpretative guidance. These regulations became effective May 24, 2011.

² 42 U.S.C. § 12101, *et seq.*

³ 42 U.S.C. § 1211(8).

⁴ 42 U.S.C. § 12102(1).

⁵ See ADA Amendments Act of 2008, Pub.L.No. 110-325, § 2 (2008).

⁶ 527 U.S. 471 (1999).

⁷ 534 U.S. 184 (2002).

⁸ *Toyota Motor Manufacturing, Kentucky, Inc. v. Williams*, 534 U.S. 184, 197 (2002).

⁹ *Id.* at 198.

¹⁰ *Id.*

¹¹ *Sutton v. United Airlines, Inc.*, 527 U.S. 471 (1999).

¹² *Id.*

¹³ 42 U.S.C. § 12102(2)(B).

¹⁴ Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act, as amended, 76 Fed. Reg. 58, 17000 (2011) (to be codified at 29 C.F.R. part 1630).

¹⁵ *Id.*

¹⁶ 42 U.S.C. 12102(4)(E)(i)-(iii). This subsection states:

(E)(i) The determination of whether an impairment substantially limits a major life activity shall be made without regard to the ameliorative effects of mitigating measures such as—

(I) medication, medical supplies, equipment, appliances, or low-vision devices (which do not include ordinary eyeglasses or contact lenses, prosthetics including limbs and devices, hearing aids and cochlear implants or other implantable hearing devices, mobility devices, or oxygen therapy equipment and supplies;

(II) use of assistive technology;

(III) reasonable accommodations or auxiliary aids or services; or

(IV) learned behavioral or adaptive neurological modifications.

(ii) The ameliorative effects of mitigating measures of ordinary eyeglasses or contact lenses shall be considered in determining whether an impairment substantially limits a major life activity.

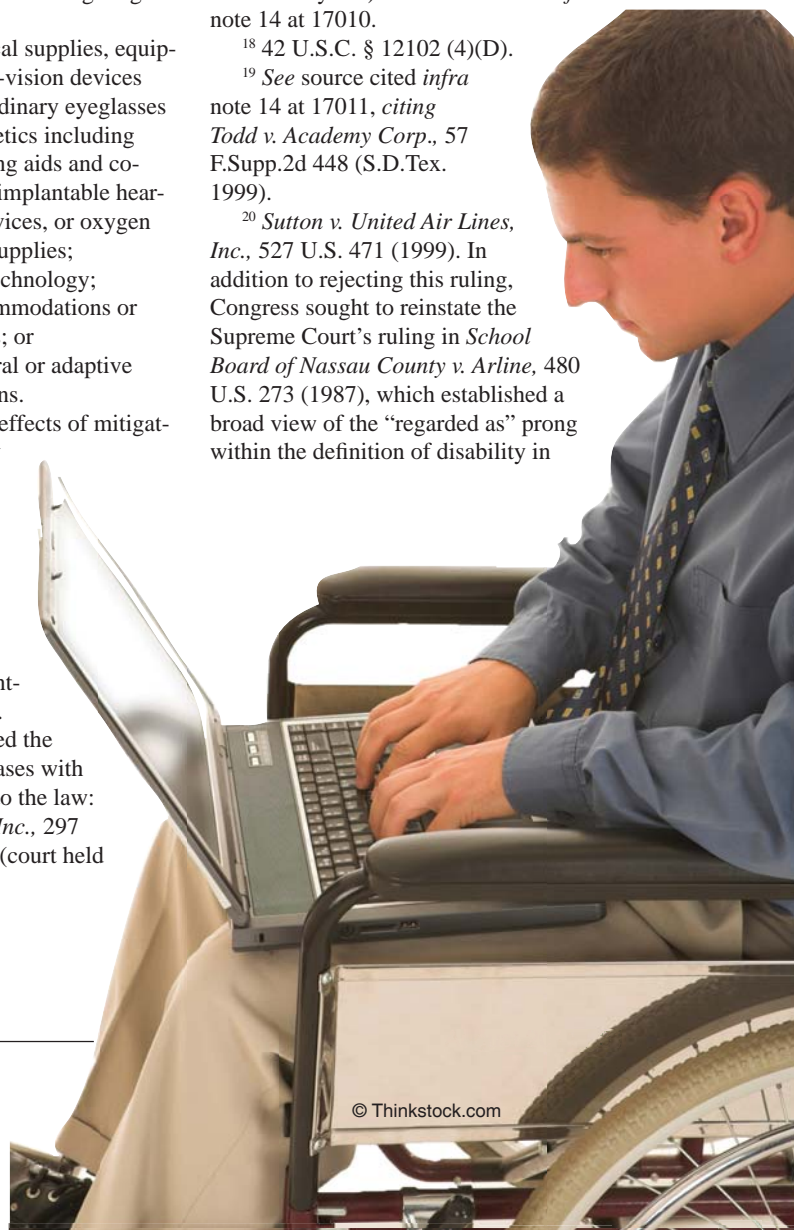
¹⁷ In commentary to the regulations implementing the ADAPA, the U.S. Department of Labor cited the following examples of cases with outcomes now contrary to the law: *Orr v. Wal-Mart Stores, Inc.*, 297 F.3d 720 (8th Cir. 2002) (court held

that in considering whether the plaintiff was disabled within the meaning of the ADA, it must consider the ameliorative effects of plaintiff’s regime of medicine, exercise, and diet and refused to consider the effects of the plaintiff’s uncontrolled diabetes on the major life activities of seeing, speaking, working, etc.); *Gonzales v. National Bd. Of Med. Examiners*, 225 F.3d 620 (6th Cir. 2000) (court found that an individual with a diagnosed learning disability was not substantially limited based on the individual’s adaptive skill to overcome this condition enabling him to read and achieve academic success); and *McMullen v. Ashcroft*, 337 F.Supp.2d 1281 (D.Wyo. 2004) (employee fired because of clinical protection did not have a claim under the ADA because of the successful management of the condition with medication for 15 years). See source cited *infra* note 14 at 17010.

¹⁸ 42 U.S.C. § 12102 (4)(D).

¹⁹ See source cited *infra* note 14 at 17011, citing *Todd v. Academy Corp.*, 57 F.Supp.2d 448 (S.D.Tex. 1999).

²⁰ *Sutton v. United Air Lines, Inc.*, 527 U.S. 471 (1999). In addition to rejecting this ruling, Congress sought to reinstate the Supreme Court’s ruling in *School Board of Nassau County v. Arline*, 480 U.S. 273 (1987), which established a broad view of the “regarded as” prong within the definition of disability in



the Rehabilitation Act of 1973. See ADA Amendments Act of 2008, Pub.L.No. 110-325, § 2(b)(3) (2008). In *Nassau*, the Supreme Court recognized that an individual who is discriminated against on account of “[s]ociety’s accumulated myths and fears about disability and disease” is as adversely affected by discrimination as someone who in fact has an impairment and, thus, should not have to show anything other than discriminatory treatment based on this perception. *Nassau* at 284.

²¹ 42 U.S.C. § 12102(3)(A). The statute further provides that this definition does not apply to conditions that are transient and minor. See 42 U.S.C. § 12102 (3)(B).

²² 587 F.3d 1255 (10th Cir. 2009), amending and superseding *Hennagir v. Utah Department of Corrections*, 581 F.3d 1256 (10th Cir. 2009).

²³ 42 U.S.C. § 12111 (8).

²⁴ *Hennagir* at 1261-1262.

²⁵ *Id.* at 1263-1264.

²⁶ *Id.* at 1259-1260.

²⁷ *Id.* at 1262.

²⁸ *Id.* at 1262, quoting *Davidson v. America Online, Inc.*, 337 F.3d 1179, 1191 (10th Cir. 2203).

²⁹ *Id.*, quoting *Milton v. Scrinver, Inc.*, 53 F.3d 1118, 1124 (10th Cir. 1995).

³⁰ *Id.* at 1263.

³¹ *Id.* at 1263, quoting *Hopkins v. Oakland County Sheriff’s Department*, 227 F.3d 719, 727 (6th Cir. 2000).

³² *Id.* at 1264, quoting *Matthews v. Denver Post*, 263 F.3d 1164, 1168-1169 (10th Cir. 2001).

³³ 558 F.3d 1312 (11th Cir. 2009). This case was litigated under the ADA, as well as the Rehabilitation Act of 1973, codified at 29 U.S.C. 701, governing disability discrimination in the federal workplace.

³⁴ *Id.* at 1315.

³⁵ *Id.*

³⁶ *Id.* at 1316. See 42 U.S.C. § 12113 (a). The ADAAA amended the qualifications standards and testing section of the ADA by adding the following language:

(C) Qualification Standards and Tests Related to Uncorrected Vision—Notwithstanding section 3(4)(E) (ii), a covered entity shall not use qualification standards, employment tests, or other selection criteria based on an individual’s uncorrected vision unless the standard, test, or other selection criteria, as used by the covered entity, is shown to be job related for the position in question and consistent with business necessity.

³⁷ *Id.* at 1317 (citation omitted).

³⁸ *Id.*

³⁹ Pub.L.No. 110-325 (2008).

Law enforcement officers of other than federal jurisdiction who are interested in this article should consult their legal advisors. Some police procedures ruled permissible under federal constitutional law are of questionable legality under state law or are not permitted at all.

Wanted: Notable Speeches

The *FBI Law Enforcement Bulletin* seeks for its Notable Speech department transcripts of presentations made by criminal justice professionals. Anyone who has delivered a speech recently and would like to share the information with a wider audience may submit a transcript of the presentation to the *Bulletin* for consideration.

As with article submissions, the *Bulletin* staff will edit the speech for length and clarity, but, realizing that the information was presented orally, maintain as much of the original flavor as possible. Presenters should submit their transcripts typed and double-spaced on 8 ½- by 11-inch white paper with all pages numbered, along with an electronic version of the transcript saved on computer disk, or e-mail them. Send the material to: Editor, *FBI Law Enforcement Bulletin*, FBI Academy, Quantico, VA 22135, or to leb@fbiacademy.edu.

Bulletin Notes

Law enforcement officers are challenged daily in the performance of their duties; they face each challenge freely and unselfishly while answering the call to duty. In certain instances, their actions warrant special attention from their respective departments. The *Bulletin* also wants to recognize those situations that transcend the normal rigors of the law enforcement profession.



Officer Toothaker

Officers from the Wakefield, Massachusetts, Police Department responded to a call for a man threatening to commit suicide. Upon arrival at the residence, officers witnessed the distraught young man in an argument with his father, who was bleeding from the head. When the subject observed Patrol Officer Amy Toothaker, he picked up a butcher knife, held it over his head, and threatened to kill her. Toothaker immediately drew her service weapon, distanced herself from the man, and prepared to defend herself. She engaged the subject in discussion, and, after a tense standoff, convinced him to put down the knife. Then, she and the other officers managed to settle the subject and arrange for his transport to a mental health facility.



Officer Sommer



Officer Nagel



Officer Clemmons

In the early morning hours, three Vandalia, Ohio, Division of Police officers went above and beyond the call of duty to assist residents of an apartment complex that was engulfed in flames. Officer Rich Sommer arrived on the scene first and heard people screaming for help while trapped inside the building. One woman stood on her balcony and held a

small child as flames roared behind them and smoke rolled over their heads. Sommer acquired a blanket from a neighbor and told the mother to drop the toddler into it; he and Officer Doug Nagel held the blanket open as the mother released the child from two floors above. Nagel and Officer Damien Clemmons assisted the woman to the ground to reunite mother and child, both uninjured. Then, Officer Sommer directed his colleagues to different apartments to evacuate residents from the burning apartments.

Nominations for the *Bulletin Notes* should be based on either the rescue of one or more citizens or arrest(s) made at unusual risk to an officer's safety. Submissions should include a short write-up (maximum of 250 words), a separate photograph of each nominee, and a letter from the department's ranking officer endorsing the nomination. Submissions can be mailed to the Editor, *FBI Law Enforcement Bulletin*, FBI Academy, Quantico, VA 22135 or e-mailed to leb@fbiacademy.edu.

U.S. Department of Justice
Federal Bureau of Investigation
FBI Law Enforcement Bulletin
935 Pennsylvania Avenue, N.W.
Washington, DC 20535-0001

Periodicals
Postage and Fees Paid
Federal Bureau of Investigation
ISSN 0014-5688

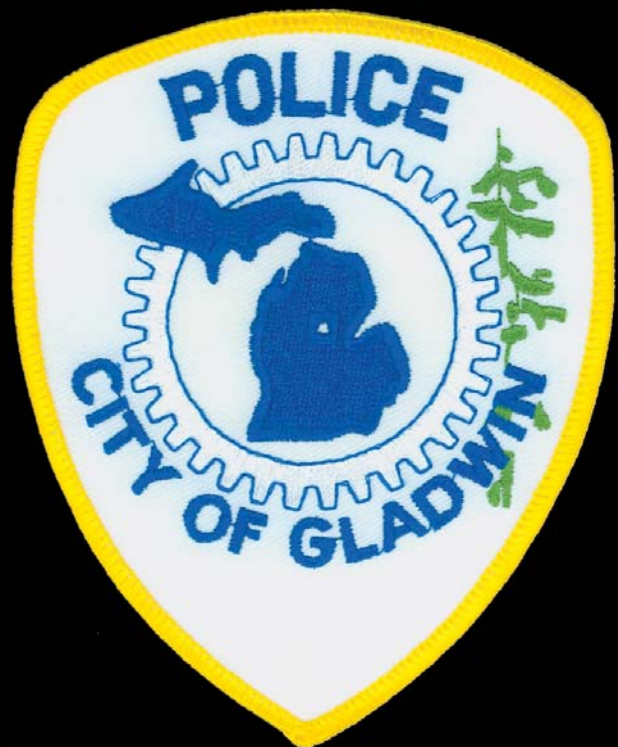
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Patch Call



The patch of the Lake City, South Carolina, Police Department is in the shape of the state and displays the half-moon and palmetto tree, like South Carolina's flag. The Challenger space shuttle honors Ron McNair, an astronaut from Lake City. Rays of the sun feature the words "honor," "justice," "peace," "integrity," and "respect," character traits of a police officer.



At the right of the patch of the Gladwin, Michigan, Police Department, a cedar tree represents the logging industry, as well as the fact that the city of Gladwin originally was called the village of Cedar. The gear represents the industrial nature of the area. Also featured is a silhouette of the state of Michigan with the location of Gladwin identified.